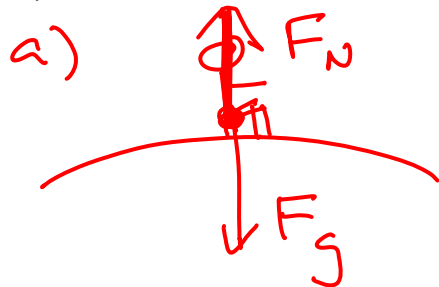


Example #7: A 62 kg student drives his 450 kg car at 25 m/s up towards the top of a hill of radius 70. m.

a) What normal force will the driver's seat exert on him at the top of the hill?

b) How fast can he drive his car over the hill without being airborne?



$$F_c = F_g - F_N$$

$$F_N = F_g - F_c = mg - \frac{mv^2}{r}$$

$$= 62 \left[9.8 - \frac{25^2}{70} \right]$$

$$\boxed{F_N = 54 \text{ N}}$$

b) at max speed, $F_N = 0$

$$\text{so } F_c = F_g$$

$$\frac{mv^2}{r} = mg$$

$$v = \sqrt{rg}$$

$$v = \sqrt{70(9.8)}$$

$$\boxed{v = 26 \text{ m/s}}$$